



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Hacker et al.  
Serial No. : 09/370,373  
Filed : August 10, 1999  
For : HERBICIDAL COMPOSITIONS FOR TOLERANT  
OR RESISTANT MAIZE CROPS  
Examiner : S. Mark Clardy  
Art Unit : 1616  
Confirmation No. : 8023

745 Fifth Avenue  
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DECLARATION

Mail Stop Non-fee Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Dr. Erwin Hacker, declares and says that:

1. I am a named inventor in the above-captioned application. I have read and I am familiar with the application.

2. My education, training and experience are as follows. From 1975-1980 I studied agricultural science at the University of Stuttgart/Hohenheim. From 1980-1984 I studied weed science at the University of Stuttgart/Hohenheim. In 1984 I received my Ph.D. degree in weed science from that university. I have been involved in herbicide research since 1983. Accordingly, I am considered by my peers to be an expert in the field to which the present application pertains.

3. I am making this Declaration in response to comments raised during the prosecution of this application regarding the significance of the presented data of the biological examples of the present application to show synergistic results for the claimed combinations.

4. Under my direct supervision, tests were conducted wherein transgenic maize plants having resistance to one or more herbicides were grown together with typical weed plants in the field in 2 x 5 m plots under natural conditions; alternatively, the weed population established naturally while the maize plants grew. The treatment with the compositions according to the invention and, as control, separately by only applying the active ingredients of the components, was carried out under standard conditions with a plot sprayer at an application rate of 200-300 liters of water per hectare in parallel tests. The application schemes used in this study are summarized in Table 1 of the present application.

5. Datasets for the killing effect of various herbicides applied individually and in combination to maize and various weeds are presented in Tables 2-20 of the present application. In the aggregate, these Tables summarize data from 45 different experiments, 20 different weed species, and 24 different binary combinations of (A) and (B) group herbicides. Surprisingly, observed killing in each of the 45 experiments was greater than Colby's expected value. The quantitated killing effects were greater than 10% of Colby's expected value in 24 of the 45 experiments, and greater than 5% in 30 of 37 experiments.

6. This quantitative method was validated by qualitative evaluation of plant appearance. Increased killing strongly correlated with increases in necrosis, chlorosis, growth inhibition, and deformation. Moreover, even small increases in killing over Colby's expected value—on the order of 1%—were accompanied by significant deleterious changes in plant appearance.

7. It is my opinion, therefore, that the herbicidal combinations examined in this study acted synergistically. The remarkable and surprising generality of the synergism between (A) and (B) group herbicides and the finding that the degree of synergism was strongly dependent on applied amounts suggest that the synergistic interactions of (A) and (B) group herbicides can be significantly enhanced by optimization of their application schemes.

8. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further, that the statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: May 9<sup>th</sup>, 2003

By: E. Hacker  
Erwin Hacker